Modelling the risk of *Mnemiopis leidyi* blooms in the North Sea

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Recent records of the invasive ctenophore *Mnemiopis leidyi* in the North Sea are a cause for concern due to the detrimental effects this invader has had on marine ecosystems in the Black and Caspian Seas. Fish stocks in the North Sea may be affected by competition and predation from *Mnemiopsis leidyi*, so it is important to determine whether the species, having been introduced, is likely to become established and bloom in the North Sea.

This study applies temperature, salinity and food constraints to data from the GETM-ERSEM model to evaluate the suitability of the North Sea for survival and reproduction of this invasive species. Large parts of the North Sea were found to be suitable for *Mnemiopsis leidyi* reproduction in summer months, although in most areas the suitable time window would not allow completion of more than two life cycles. The highest risk areas were in southern coastal and estuarine regions and in the Skagerrak and Kattegat, due to a combination of high temperature and food concentrations. Importantly, food was found to limit winter survival and so may restrict the overwintering population. Continued monitoring of this species, especially in areas predicted to be at a high risk, will be essential to determine whether it is likely to become a problem in the North Sea.